



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,870	01/08/2002	Peer Johannsen	1454.1210	8728

21171 7590 04/14/2003

STAAS & HALSEY LLP  
700 11TH STREET, NW  
SUITE 500  
WASHINGTON, DC 20001

EXAMINER

DINH, PAUL

ART UNIT	PAPER NUMBER
----------	--------------

2825

DATE MAILED: 04/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/038,870

Applicant(s)

JOHANNSEN, PEER

Examiner

Paul Dinh

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 8-13 is/are rejected.
- 7) ☒ Claim(s) 3-7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

- a. The abstract (page 26) is objected to because the stand-alone “ Fig. 3” should be placed in an appropriate place in the abstract or “ Fig. 3” should be deleted (abstract page should be a single paragraph).
- b. The specification is objected to because  $N+$  in “  $n \in N+$  “ is not clearly described.

### *Claim Objections*

Claim 1 is objected to because it is not clear what being reduced in “*reduced RTL*”. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

Claim 2 is objected to because “the reduce-width RTL model” lacks antecedent basis.

Claim 9 is objected to because “ can be” is not a positive recitation of the invention and should be deleted.

### *Claim Rejections - 35 USC § 112*

*The following is a quotation of the first paragraph of 35 U.S.C. 112:*

*The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.*

Claim 8 is rejected under 35 U.S.C. 112, first paragraph as being a “single means/step” claim, note MPEP 2164.08 (a). Claims 9-13 are rejected because they depend from claim 8.

*The following is a quotation of the second paragraph of 35 U.S.C. 112:*

*The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.*

Claims 2, 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2, 9 are rejected because  $N+$  in “  $n \in N+$  “ is not clearly defined in the claims.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

*(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

Claims 1-2, 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Dangelo et al. (USP

Art Unit: 2825

5598344). Dangelo discloses a method/tool comprising:

(Claim 1) determining, for each property of a non-reduced RTL model (fig 12 or 18 and/or c2, 5 or c8, 10, 19 or c27, 37, 49), a reduced RTL model (abstract/summary and/or c49-50, **scaling** includes **reduction**) for a design specification, the reduced RTL model retaining the signal property of the non-reduced RTL model; and

(Abstract/summary and/or c49-50, i.e., can be scaled to produce a scaled version of the design, the scale technique ... replication to produce fully-functional scaled design which closely match the function of the model design, producing scaled, fully-parameterized design from a model design which produces fully-functional, testable designs, the resulting RTL description is simulated in a block 1216 to ensure that it equates to the original behavioral description, etc.)

subjecting the reduce RTL model to a property checking process (in fig 1-21)

(Claim 8) a pre-property checking unit (in fig 1-21) to reduce width of signal (abstract/summary and/or c49-50, **scaling** includes **reduction**, see c32: 60, c35: 5 for width) occurring in a non-reduced RTL model (fig 12 or 18 and/or c2, 5 or c8, 10, 19 or c27, 37, 49) of an input design specification for a digital circuit, to produce a reduced-width RTL model retaining signal properties of the non-reduced RTL model.

(Abstract/summary and/or c8, c49-50, i.e., can be scaled to produce a scaled version of the design, the scale technique ... replication to produce fully-functional scaled design which closely match the function of the model design, producing scaled, fully-parameterized design from a model design which produces fully-functional, testable designs, the resulting RTL description is simulated in a block 1216 to ensure that it equates to the original behavioral description, etc.)

(Claim 2) determining the design specification and properties of a digital circuit design prior to said determining of the reduced (width) RTL model (fig 1-21); and

Synthesizing an RTL netlist of high level primitives (c8 and/or c15-16 and/or c27-28, 37) so that the digital circuit is defined as an interconnection of control and data path portions where signal of a width  $n$  (c32: 60, c35: 5) are determined such that  $n \in \mathbb{N}^+$  (insofar the limitation is understood), and bit vectors (abstract or fig 9 or c3: 44, c7: 17 or c25, 50, 54) or respective lengths each determine a signal value.

(Claim 9) a front-end unit (fig 1-12, 18, 20 and/or c13, the front-end unit is the unit(s) interfacing design/specification/description/behavior/chip/VHDL/data base/input) coupling to said pre-property checking unit to receive input data relating to a design specification and properties characteristics of a design of a design to be verified, to provide an RTL net list (fig 12 or c37 or c39, 42) of the design specification and properties characteristics, so that the digital circuit [can be] is defined as an interconnection of control and data path portions where signal of a width  $n$  (c32: 60, c35: 5) are

Art Unit: 2825

determined such that  $n \in \mathbb{N}^+$  (insofar the limitation is understood), and bit vectors (abstract or fig 9 or c3: 44, c7: 17 or c25, 50, 54) or respective lengths each determine a signal value.

*Allowable Subject Matter*

Claims 3-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 10-13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

*Reasons for Allowance*

Claims 3-7, 10-13 would be allowable because the prior art does not teach or suggest: the limitations in:

Claim 3, lines 2-7 and similarly recited claim 10, line 2-10;

Claim 5, lines 2-10 and similarly recited claim 12, line 2-10.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Dinh whose telephone number is (703) 305-5662. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (703) 308-1323. The fax number for the organization handling this application is (703) 872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Paul Dinh

Patent Examiner

April 2, 2003

  
VUTHE SIEK  
PRIMARY EXAMINER